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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/596,876	06/19/2000	Stephane Menard	SIMN:004	5658

7590

08/20/2002

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EXAMINER

VORTMAN, ANATOLY

ART UNIT PAPER NUMBER

2835

DATE MAILED: 08/20/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/596,876

Applicant(s)

MENARD ET AL.

Examiner

Anatoly Vortman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 June 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 22-29 is/are allowed.
- 6) ☒ Claim(s) 1-4, 15 and 16 is/are rejected.
- 7) ☒ Claim(s) 5-14 and 17-21 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 7.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Amendments

1. The submission of the amendment filed on 06/28/02 is acknowledged. At this point claim 8 has been amended and new claims 27-29 have been added. Thus, claims 1-29 are pending in the instant application.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-4, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over US/4,887,430 to Kroll et al., (Kroll) in view of DE/3,731,146 to Wolf.

Regarding claim 1, Kroll disclosed (Fig. 1-3) a shape memory alloy (SMA) switch comprising:

a substrate (14); a SMA element (16, 20) attached to said substrate (14) at first (18) and second (22) locations and having a first portion (16) and a second portion (20), said first portion (16) contracting to place said SMA element in a first configuration upon being heated above a predetermined temperature (Fig. 1) and said second portion (20)

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contracting to place said SMA element in a second conformation upon being heated above said predetermined temperature; and

a cursor (12) attached to said SMA element at a location substantially intermediate said first (16) and said second (20) portions to reciprocate between a first position when said SMA element is in said first conformation (Fig. 1) and a second position when said SMA element is in said second conformation (Fig. 2), but did not disclose that said SMA element is continuous.

Wolf disclosed (Fig. 1) a shape memory alloy switch (Fig. 1) of similar design as the switch disclosed by Kroll, and having continuous SMA element (1, 2).

The inventions of Kroll and Wolf are from the same field of endeavor (SMA actuators), therefore the purpose of continuous SMA element disclosed by Wolf would be recognized in the invention of Kroll.

It would have been obvious to a person of ordinary skill in the thermal switch art at the time the invention was made to substitute said two piece SMA element of Kroll with the continuous SMA element as taught by Wolf in order to simplify the device and to reduce the parts content.

Regarding claim 15, Kroll disclosed (Fig. 1-3) a bistable shape memory alloy (SMA) switch comprising:

a substrate (14);

a transducer connected to said substrate (14) comprising a SMA element (16, 20) having first (Fig. 1) and second (Fig. 2) conformations, and including:

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- a) a first heating unit (24, 26) coupled to a first segment (16) of said SMA element to heat said first segment (16) so that said SMA element assumes said first conformation (Fig. 1); and
- b) a second heating unit (26, 38) coupled to a second segment (20) of said SMA element to heat said second segment (20) above said predetermined temperature causing contraction of said second segment (20) so that said SMA element assumes said second conformation (Fig. 2);

a cursor (12) coupled to said SMA element to reciprocate between first and second positions as said SMA element (16, 20) alternates between said first and said second conformations;

a first contact arm (38) in sliding contact with said cursor (12) to move from an open position to a closed position as aid cursor (12) moves from said second (Fig. 2) to said first (Fig. 1) position, but did not disclose that said SMA element is continuous.

Wolf disclosed (Fig. 1) a shape memory alloy switch (Fig. 1) of similar design as the switch disclosed by Kroll, and having continuous SMA element (1, 2).

The inventions of Kroll and Wolf are from the same field of endeavor (SMA actuators), therefore the purpose of continuous SMA element disclosed by Wolf would be recognized in the invention of Kroll.

It would have been obvious to a person of ordinary skill in the thermal switch art at the time the invention was made to substitute the two piece SMA element of Kroll with the continuous SMA element as taught by Wolf in order to simplify the device and to reduce parts content.

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Regarding claims 2 and 3, Kroll disclosed an electrically conductive first contact arm (38) in sliding contact with said cursor (12) to move from an open position to a closed position as said cursor (12) moves from said second (Fig. 2) to said first (Fig. 1) position.

Regarding claim 4, Kroll disclosed means (24, 26, and 28) for separately applying sufficient heat to said first (16) and said second (20) portions of said SMA element to reciprocate said cursor (12) between said first (Fig. 1) and said second (Fig. 2) positions.

Regarding claim 16, Wolf disclosed (Fig. 1) that the first and second heating units respectively comprise a first electrical circuit and a second electrical circuits (7-9), said first and second electrical circuits (7-9) sharing a common node (4) on the SMA element (1, 2).

Allowable Subject Matter

4. Claims 22-29 are allowed.

5. Claims 5-14, and 17-21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

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6. Applicant's arguments filed on 06/28/02 have been fully considered but they are not persuasive.

The main thrust of the Applicant's arguments is directed to the fact that the Wolf reference does not disclose a continuous SMA element.

On the contrary, the Examiner would like to direct the Applicant's attention to the fact that Wolf disclosed an electrically continuous SMA element as shown on Fig. 1. Please note, that power from the battery (8) is supplied to both parts (1, 2) of the SMA element via electrically conductive linking member (4). Thus, both electrically conductive parts (1, 2) of the SMA element are interconnected by electrically conductive linking member (4), rendering the entire SMA element to be electrically conductive (i.e. electrically continuous).

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anatoly Vortman whose telephone number is 703-308-7824. The examiner can normally be reached on 9:30-6:00, Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Darren Schuberg can be reached on 703-308-4815. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3431 for regular communications and 703-305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1782.

A.V.
August 14, 2002

A handwritten signature in cursive script, appearing to read 'A. Vortman', followed by a horizontal line.

Anatoly Vortman
Primary Examiner
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